

# Gene Freudenburg

*Curriculum Vitae*, April 2008

**Chair, Department of Mathematics**  
**Professor of Mathematics**  
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## 1 Education

Washington University, Saint Louis	Mathematics	Ph.D.	1992
Saint Louis University	Mathematics	M.S.	1986
Valparaiso University	Interdisciplinary	B.A.	1982

## 2 Appointments

### Western Michigan University

2006-present	Chair, Department of Mathematics
2006-present	Professor of Mathematics

### University of Southern Indiana

2005-2006	Assistant Dean, Pott College of Science & Engineering
2005-2006	Professor of Mathematics
1999-2005	Associate Professor of Mathematics
1995-1999	Assistant Professor of Mathematics

### Ball State University

1992-1995	Assistant Professor of Mathematics
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## 3 Research Interests

Commutative algebra and algebraic geometry; algebraic automorphisms of affine varieties; derivations of polynomial rings; algebraic group actions; invariant theory (MSC numbers 13, 14)

## 4 Grants

Agency: US National Science Foundation, Division of Math. Sciences  
Project Title: *Algebraic Automorphisms of Affine Space*  
Principal Investigator: G. Freudenburg  
Award Amount: \$61,275  
Award Number: DMS 0101836  
Dates: September 2001 to August 2005

## 5 Books

G. Freudenburg, *Algebraic Theory of Locally Nilpotent Derivations*  
Encyclopaedia of Mathematical Sciences  
Invariant Theory and Algebraic Transformation Groups, Volume VII  
R. V. Gamkrelidze, V. L. Popov, Subseries Editors  
Springer Verlag (Berlin, Heidelberg, New York) 2006, 261 pages

## 6 Awards

2004 Distinguished Professor, University of Southern Indiana

*“The Distinguished Professor Award recognizes a university faculty member for excellence in teaching, scholarship, and service as well as those intangible personal qualities which inspire others. This award is the highest recognition bestowed upon a faculty member at the University of Southern Indiana.”* (From the Award Description)

## 7 Doctoral Thesis

*On the Automorphism Group of the Polynomial Ring in Three Variables*, Washington University in Saint Louis, 1992. David L. Wright, Advisor

## 8 Research Articles

- [20] G. Freudenburg, *Derivations of  $R[X, Y, Z]$  with a slice*, J. Algebra (9 pages, to appear)
- [19] D. Daigle, G. Freudenburg, *Families of affine fibrations*, Progr. Math. (9 pages, to appear)
- [18] G. Freudenburg, *A linear counterexample to Hilbert’s Fourteenth Problem in dimension eleven*, Proc. Amer. Math. Soc. **135** (2007) 51-57
- [17] G. Freudenburg, *Vénéreau polynomials relative to  $\mathbb{C}^*$ -vector bundles and stable coordinates*, in: Affine Algebraic Geometry, Takayuki Hibi, Editor, Osaka University Press, 2007

- [16] G. Freudenburg, L. Moser-Jauslin, *Real and rational forms of certain  $O_2(\mathbb{C})$ -actions, and a solution to the Weak Complexification Problem*, Transform. Groups **9** (2004) 257-272
- [15] G. Freudenburg, L. Moser-Jauslin, *Embeddings of Danielewski surfaces*, Math. Z. **245** (2003) 823-834
- [14] G. Freudenburg, L. Moser-Jauslin, *A non-linearizable  $S_3$ -action on  $\mathbb{C}^4$* , Annals Fourier Inst. **52** (2002) 133-143
- [13] G. Freudenburg, *A survey of counterexamples to Hilbert's Fourteenth Problem*, Serdica **27** (2001) 171-192
- [12] D. Daigle, G. Freudenburg, *Triangular derivations of  $k[X_1, X_2, X_3, X_4]$* , J. Algebra **241** (2001) 328-339
- [11] G. Freudenburg, *Recent progress on Hilbert's Fourteenth Problem via triangular derivations*, Ann. Polon. Math. **76** (2001) 95-99
- [10] D. Daigle, G. Freudenburg, *A note on triangular derivations of  $k[X_1, X_2, X_3, X_4]$* , Proc. Amer. Math. Soc. **129** (2000) 657-662
- [9] G. Freudenburg, *A counterexample to Hilbert's Fourteenth Problem in dimension six*, Transform. Groups **5** (2000) 61-71
- [8] D. Daigle, G. Freudenburg, *A counterexample to Hilbert's Fourteenth Problem in dimension five*, J. Algebra **221** (1999) 528-535
- [7] D. Daigle, G. Freudenburg, *Locally nilpotent derivations over a UFD and an application to rank two locally nilpotent derivations of  $k[X_1, \dots, X_n]$* , J. Algebra **204** (1998) 353-371
- [6] G. Freudenburg, *Actions of  $\mathbb{G}_a$  on  $\mathbb{A}^3$  defined by homogeneous derivations*, J. Pure Appl. Algebra **126** (1998) 169-181
- [5] G. Freudenburg, *Local slice constructions in  $k[X, Y, Z]$* , Osaka J. Math. **34** (1997) 757-767
- [4] G. Freudenburg, *A note on the kernel of a locally nilpotent derivation*, Proc. Amer. Math. Soc. **124** (1996) 27-29
- [3] G. Freudenburg, *Triangulability criteria for additive group actions on affine space*, J. Pure Appl. Algebra **105** (1995) 267-275
- [2] G. Freudenburg, *One-parameter subgroups and the triangular subgroup of the affine Cremona group*, Automorphisms of Affine Spaces (Curacao, 1994), 201-213, Kluwer Acad. Publ., Dordrecht, 1995
- [1] G. Freudenburg, *Three-dimensional analogues of the Nagata surfaces* Comm. Algebra **23** (1995) 139-164

## 9 Visiting Appointments

Universite de Bourgogne, Department of Mathematics  
Dijon, France, June 2003  
Host: L. Moser-Jauslin

Universität Basel, Department of Mathematics  
Basel, Switzerland, June 2001  
Host: H. Kraft

## 10 Selected Talks

*The Vénéreau polynomials relative to  $\mathbf{C}^*$ -fibrations and stable coordinates*  
Symmetry and Spaces: 60th Birthday Conference for Gerry Schwarz  
Fields Institute, University of Toronto  
Toronto, Canada (10-14 July 2006)

*Sounding the Depths of Hilbert's 14th Problem*  
First Joint AMS-Taiwanese Mathematical Society Meeting  
Special Session on Affine Algebraic Geometry  
Taichung, Taiwan (12-18 December 2005)

*Embeddings of Danielewski surfaces*  
Workshop on Algebraic Transformation Groups, Universität Basel  
Basel, Switzerland (24 June 2003)

*Embeddings of Danielewski surfaces*  
Joint AMS-RSME Meeting, Special Session on Affine Algebraic Geometry  
Seville, Spain (20 June 2003)

*Algebraic Automorphisms of  $\mathbf{C}^n$*   
Algebra Seminar, Université de Bourgogne  
Dijon, France (11 June 2003)

*Polynomial Automorphisms*  
Algebra Seminar, Catholic University Nijmegen  
Nijmegen, The Netherlands (20 March 2002)

*Asanuma's Non-Linearizable Torus Actions and the Cancellation Problem*  
Group Actions on Rational Varieties, Centre Recherche Mathématique  
Montreal, Canada (27 February 2002)

*Counterexamples to Hilbert's 14th Problem*  
Mathematics Lecture, Universität Basel  
Basel, Switzerland (29 June 2001)

*A Non-Linearizable Action of  $S_3$  on  $\mathbf{C}^4$*   
Algebra Seminar, Universität Freiburg  
Freiburg, Germany (22 June 2001)

## 11 Workshops

EAGER 26th Autumn School in Algebraic Geometry  
“ $\mathbf{C}^+$  Actions on Affine Spaces and Locally Nilpotent Derivations”  
Łukęcin, Poland, Sept. 14-20, 2003  
Lecturers: D. Daigle and G. Freudenburg  
Organized by M Koras and J. Buczyński,  
Institute of Mathematics, Warsaw University

## 12 Professional Service

### Referee work

Journal of Algebra, Journal of Algebraic Geometry, Journal of Pure and Applied Algebra, Transformation Groups, Communications in Algebra, Linear Algebra and Its Applications, Applied Mathematical Letters, American Mathematical Monthly

### Review Work

**Articles.** Article reviewer for *Mathematical Reviews* (since 1996) and *Zentralblatt Mathematik* (since 2001)

**Grant Proposals.** Reviewer for U.S. *National Science Foundation* and Dutch *National Organization for Scientific Research*

**Books.** Book review, *American Mathematical Monthly* 103 (1996)

### Conference Organization

Special Session: *Geometry of Affine Space*  
931st Meeting of the American Mathematical Society  
University of Louisville, March 1998  
Organizers: G. Freudenburg and D.L. Wright

## 13 Research References

Hyman Bass	Professor, University of Michigan
Arno van den Essen	Professor, University of Nijmegen
Hanspeter Kraft	Professor, University of Basel
Paul C. Roberts	Professor, University of Utah
K. Peter Russell	Professor, McGill University
David L. Wright	Professor and Mathematics Department Chair, Washington University

